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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Flying Insect Exterminator

(72) Biela, Paul - Canada ;

(71) Same as inventor

(57) 12 Claims

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ABSTRACT

The invention is a device, to catch and exterminate flying insects, that is comprised of: a hollow housing that is open at its top end. A fan is secured within the housing, so that its intake end faces the top of the housing. A light source is located above and proximate the intake end of the fan. An air-permeable enclosure, the 'catcher', the inside of which may be accessed by a person who is operating the device, forms the end portion of the housing. The catcher may either be a separate air-permeable element, that is removably sealingly attached to the housing's bottom end, or it may be the bottom portion of the housing itself, which is air-permeable, and which has a closeable access port.

## FLYING INSECT EXTERMINATOR

## Background of the Invention

## Field of the Invention

The present invention relates to flying insect capturing and killing devices. In particular the present invention relates to devices that capture the insect by means of suction.

## Description of Related Art

Flying insects, such as mosquitoes, flies, moths, and the like, have always posed a nuisance problem to people who live in areas where those insects are found. In the last half of this twentieth century, people have increasingly turned their attention to ridding themselves of nuisance insects. In some locations, such as Winnipeg, Manitoba, Canada, hundreds of thousands of dollars are spent, annually, to spray the entire city with mosquito killing poison. Mosquitoes and other insects have been similarly attacked in other areas, at great expense to the municipality. Personal use insect killing devices have also been known for many years. Some examples include, fly paper, the fly swatter, aerosol can poison sprays. Other, more mechanized examples, include devices having a suction collection area, which draws in the insect. Many suction collection devices rely on one-way opening flaps, or connecting passages, and multiple stages, through which the captured insect must flow, before it reaches the secure holding area. Many insect trapping devices, including suction devices, also rely on a poison inside the device, to kill the insect, or on a disposable container, into

1 which the insects are drawn.

### Summary of the Invention

5 A first object of the present invention, is to provide a relatively easy to construct, and inexpensive, flying insect catching and exterminating device. A second object of the invention, is to provide an environmentally friendly device, that is also effective in catching and exterminating flying insects.

10 A third object of the invention is to construct the device so that it is relatively inexpensive to operate. A fourth object of the invention is to provide a device that requires as little maintenance as possible, with the exception of discarding the killed insects. A fifth object of the invention is to provide a

15 device that is quiet and inoffensive in operation. A sixth object of the invention, is to provide a device that is effective against a large variety of flying insects, without the need to modify it for any of the variety of insects.

The objects of the invention are accomplished by

20 constructing a device comprised of: a hollow housing, having an opening at its top end; a fan secured within the housing, such that the intake end of the fan faces the top of the housing; a light source above and proximate the intake end of the fan; an air-permeable, non-insect permeable, enclosure, the 'catcher',

25 the inside of which may be accessed by a person who is operating the device, that is the terminus of the bottom portion of the housing. The catcher may either be a separate air-permeable, non-insect permeable element, that is removably sealingly attached to the housing's bottom end, or it may be the bottom

1 portion of the housing itself, which is air-permeable, and which  
has a closeable access port.

5 The insect is attracted to the light source. The fan, which  
is in continuous operation, creates a flow of air from its intake  
end, to and past its exhaust end. An insect that has been  
attracted to the light source, in its flight around and near the  
light source, will, in all but negligible instances, fly into the  
air stream created by the fan. The air stream then sucks the  
insect through the spinning fan blades and into the catcher. The  
10 insect cannot fly back up through the fan blades and out of the  
housing, because the spinning fan blades make such a flight  
impossible in all but the most anomalous of situations, and the  
air stream that was strong enough to suck the insect down, is in  
continuous existence, and therefore should be strong enough to  
15 keep the insect from flying against it, out of the housing. The  
air stream also continuously passes over the insect and through  
the air-permeable portion of the catcher, continuously  
dehydrating the insect, until after a sufficient time, the insect  
is killed from dehydration.

20 Periodically, as necessary, the catcher is emptied.

The only consumption of the device is the electricity  
required to power the light source, and to run the fan. The only  
anticipated maintenance, other than emptying the insects, is  
replacement of the light source, when it ceases to function.

#### 25 Brief Description of the Drawings

Figure 1 is a perspective view of a device according to the  
invention, employing a mesh catcher, and a cover above

1 the light source.

Figure 2 is a perspective view of a device according to the invention, employing a sack type catcher, and a cover  
5 above the light source.

Figure 3 is a perspective view of a device according to the invention, employing a sack type catcher, a cover above  
10 the light source, and a holding means for an insect attractive substance.

Figure 4 is a perspective view of a device according to the invention, wherein the bottom portion of the housing is  
15 air-permeable.

#### Description of the Preferred Embodiment

Figure 1 illustrates a preferred embodiment of a device according to the invention. It is comprised of a housing 9, a light source  
20 19, which in the preferred embodiment is a light bulb, a fan 10, fan body supports 12, which securely hold the fan approximately centrally within the housing, a cover 21, that is securely attached to the housing, a hanging means 20a, securely attached to the cover, a power cord 13, for providing electricity to run  
25 the fan and the light bulb, a mesh catcher 15b, that is sealingly attached to the housing by means of screws 30, and which has a hinged bottom opening door 22. The cover 21 is non-transparent. The insects can approach the light source through spaces 23.

The distance between the light source 23, and the tops of

1 the fan blades 11, is chosen such that the air stream created by  
the fan, is strong enough, within a distance from the light  
source, that the insects of interest are likely to fly, to draw  
in the insects, and suck them through the fan blades and into the  
5 catcher 15b. The distance between the light source and the air  
stream will vary depending on the insects of interest, however,  
the choice of said distance will be known to those familiar with  
the art.

10 The housing 9, and the cover 21, may each be made out of any  
suitable metal or other material, such as plastic. They may both  
be made out of the same suitable material, or they may each be  
made out of different ones of the suitable materials. Any  
commercially available fan may be used, provided it creates a  
sufficient air stream. The hanging means 20a, may also be made  
15 out of any suitable metal or plastic, or other material, and its  
means of attachment to the cover 21, will be clear to those in  
the art, and will vary depending on the material out of which the  
hanging means is made, and out of which the cover is made.

20 The cover 21 acts to protect the light bulb and the fan and  
motor from rain and other air born elements. The cord 13,  
supplies power to both the fan and the light bulb, its connection  
to the light bulb is not shown.

25 It can be seen that the smaller that the openings 23 are  
made, the greater suction will be created at them. On the other  
hand, they must be large enough to allow a sufficient volume of  
insects to fly through them, for the device to be optimally  
effective.

Figure 2 also illustrates a preferred embodiment of the  
device. In figure 2 the hanging means 20b, is attached to the

1 housing. Another variation in figure 2, is the location of the  
light bulb 19; in this embodiment it is mounted in a socket that  
sits at the top of the fan. The catcher 15a, of figure 2, is an  
air-permeable cloth sack that has an elastic edge, by which it  
5 sealingly attaches to the bottom of the housing. The catcher 15a  
is simply pulled down and off the housing, to be emptied, it is  
then slipped back onto the bottom of the housing.

Figure 3 illustrates another type of cover 17, to protect  
the light bulb and fan from rain and other air born elements. A  
10 further enhancement to the preferred embodiment illustrated in  
figure 3, is the holder 34. Holder 34 is for retaining, and  
exposing to the air, an attractive element, that will give off  
particles, or molecules, that may become air born, and which are  
attractive to the flying insects that the device is being used to  
15 catch and kill. It will be readily known to those in the art,  
what elements to place in holder 34, to further attract the  
insects they are building the device to catch and exterminate.  
The hanging means, in figure 3, is an eye bolt 20c, secured to  
the top of cover 17.

20 Figure 4 illustrates another embodiment of the device. It  
does not have a cover, or a hanging means. It rests on legs 31.  
In figure 4, there is not a separate catching element. A portion  
of the bottom of the housing 9, which portion is generally  
indicated by number 40, has located in it, air-permeable vents  
25 33, and door 32.

In all of the embodiments, the principal of operation is the  
same. The light source attracts flying insects. The flying  
insects that have come to the light source, and have entered the  
air stream created by the fan, are sucked through the fan blades



1 and into the catcher. They cannot fly back out of the catcher  
due to the constant opposed air current, and due to the spinning  
of the fan blades. While they are in the catcher they are  
constantly exposed to a strong current of air passing over them  
5 and out of the catcher via its air-permeable element. The  
constant flow of air over the insects dehydrates and thereby  
kills them. The catcher is emptied as desired.

Poisons are not required to kill the insects. Electric  
shock, and its accompanying noise are not required to kill the  
10 insects. The device is therefore not polluting with poisons, or  
distracting with noise. It consumes no resources, except the  
electricity to run it.

It will readily be seen by those skilled in the art, that  
many different materials could be used for the catcher, depending  
15 on its construction. Such materials include, but are not limited  
to, plastic, cloth, and screen and wire mesh. It can also be  
seen that the shape of the housing may be varied, and that the  
shape of the catcher may be varied, and that the shape of the fan  
may be varied, and that the shape of the cover, if one is used,  
20 may be varied, as may the hanging means, if one is used. Many  
variations will be obvious, and they are included in the  
invention, by its claims.

## CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A flying insect catching and exterminating device, comprised of: a hollow housing, having an opening at its top end, and an opening at its bottom end; a fan secured within the housing, such that the intake end of the fan faces the top of the housing; a light source, above and proximate the intake end of the fan; an air-permeable open ended enclosing means; wherein the open end portion of the enclosing means is removably sealingly attachable to the housing's bottom end, and wherein the flying insects which the device was designed to catch and exterminate, cannot pass through the air-permeable portion of the enclosing means.

2. A flying insect catching and exterminating device, comprised of: a hollow housing, having an opening at its top end, a closed bottom end, and an openable portion near its bottom end; a fan secured within the housing, such that the intake end of the fan faces the top of the housing; a light source, above and proximate the intake end of the fan; and wherein part of the housing below the fan is air-permeable, but is not permeable to the flying insects which the device was designed to catch and exterminate.

3. A flying insect catching and exterminating device, comprised of: a hollow housing, having an opening at its top end, a closed bottom end with an openable portion in it; a fan secured within the housing, such that the intake end of the fan faces the top of

the housing; a light source, above and proximate the intake end of the fan; and wherein part of the housing below the fan is air-permeable, but is not permeable to the flying insects which the device was designed to catch and exterminate.

4. A flying insect catching and exterminating device, as described in claim 1, wherein the enclosing means is a sack made out of an air-permeable cloth.

5. A flying insect catching and exterminating device, as described in claim 1, wherein the enclosing means is a sack made out of an air-permeable non-cloth substance.

6. A flying insect catching and exterminating device, as described in claim 1, wherein the catcher is a cage, made out of a mesh material, the holes of which are too small to allow any of the insects the device was designed to catch and exterminate, to pass through them.

7. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised of a cover secured above the light source, such that any of the flying insects the device was designed to catch and exterminate, may enter between the cover and the intake end of the fan.

8. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised of a holding means suitable for holding an insect attractive substance.

9. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised of a cover secured above the light source, such that any of the flying insects the device was designed to catch and exterminate, may enter between the cover and the intake end of the fan, and that is also comprised of a holding means suitable for holding an insect attractive substance.

10. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised a hanging means, secured to the housing, by which the device may be hung from a hook.

11. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised of a cover secured to the housing, above the light source, such that any of the flying insects the device was designed to catch and exterminate, may enter between the cover and the intake end of the fan, and which is also comprised of a hanging means, by which the device may be hung from a hook.

12. A flying insect catching and exterminating device, as described in claims 1, 2, 3, 4, 5, or 6, that is also comprised of a cover secured above the light source, such that any of the flying insects the device was designed to catch and exterminate, may enter between the cover and the intake end of the fan, and that is also comprised of a holding means suitable for holding an insect attractive substance, and which is also comprised of a hanging means, by which the device may be hung from a hook.

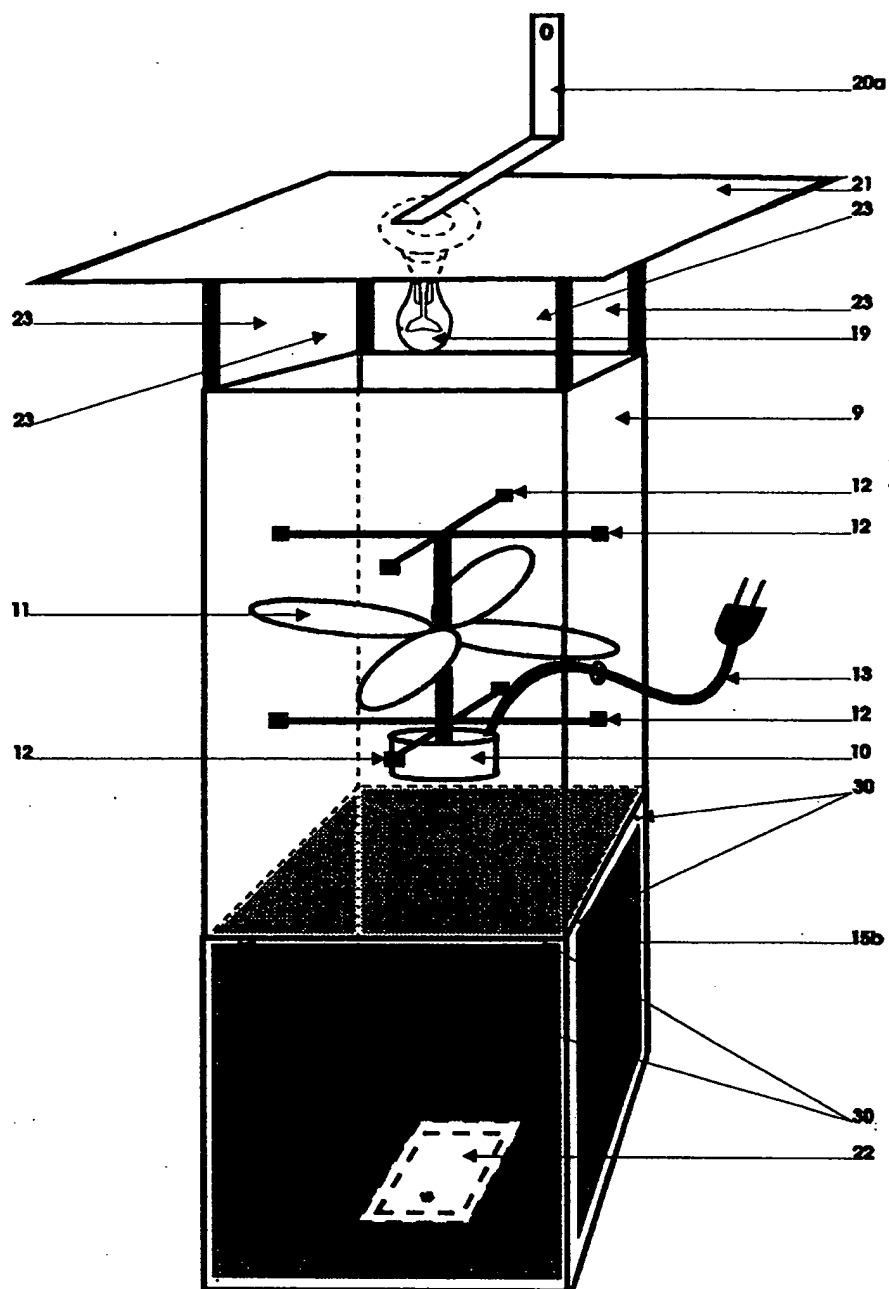


FIG. 1

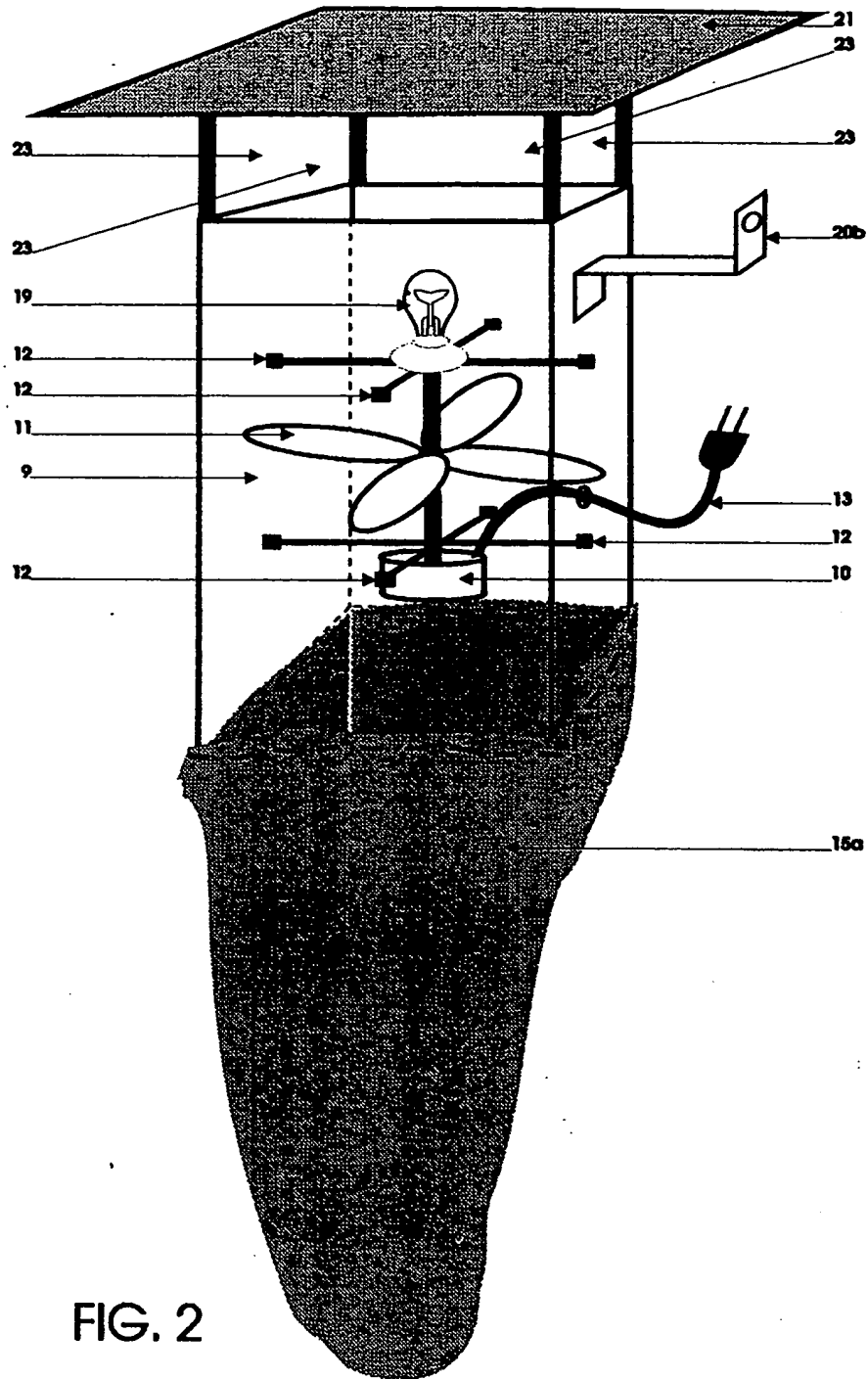


FIG. 2

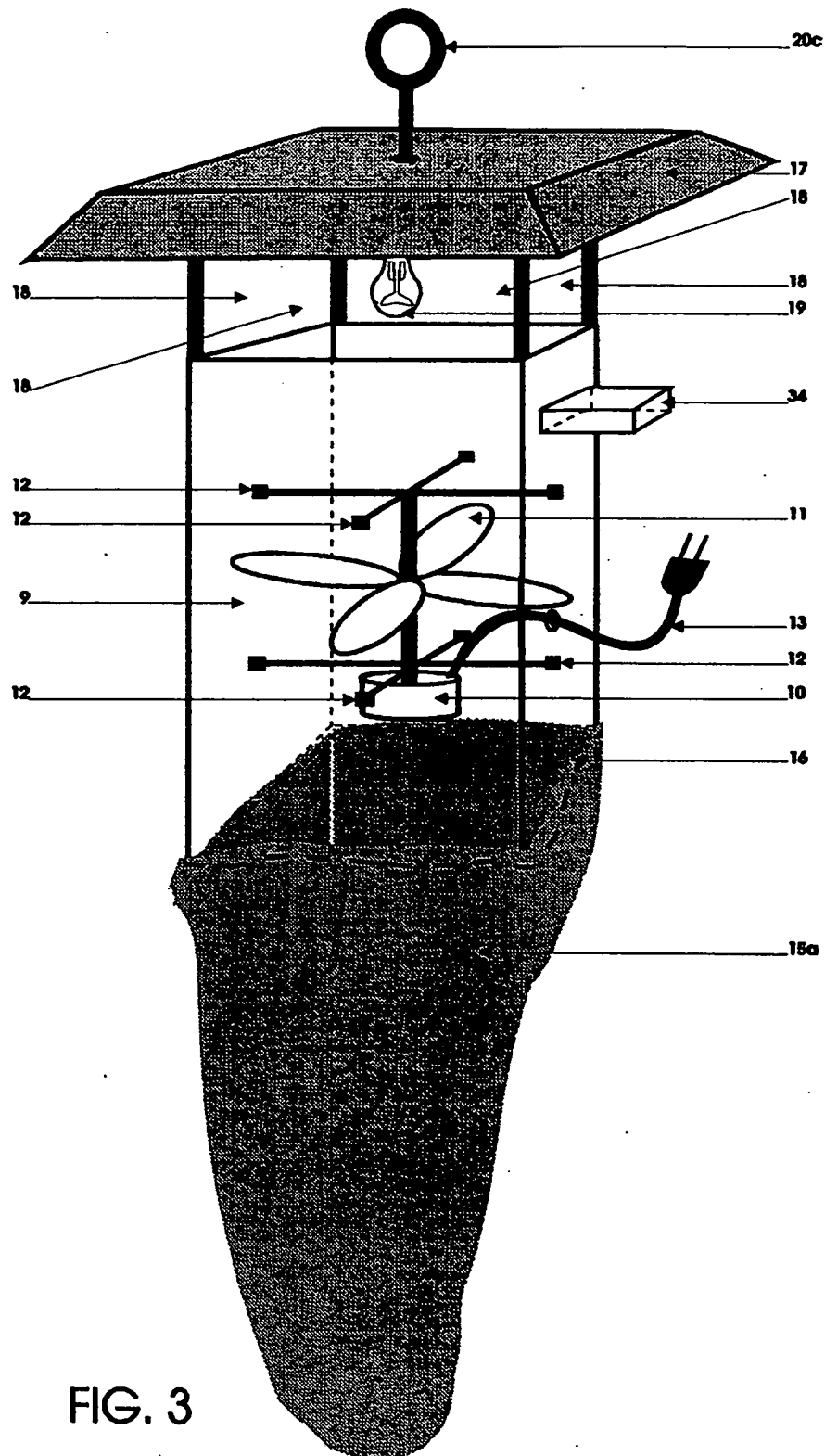


FIG. 3

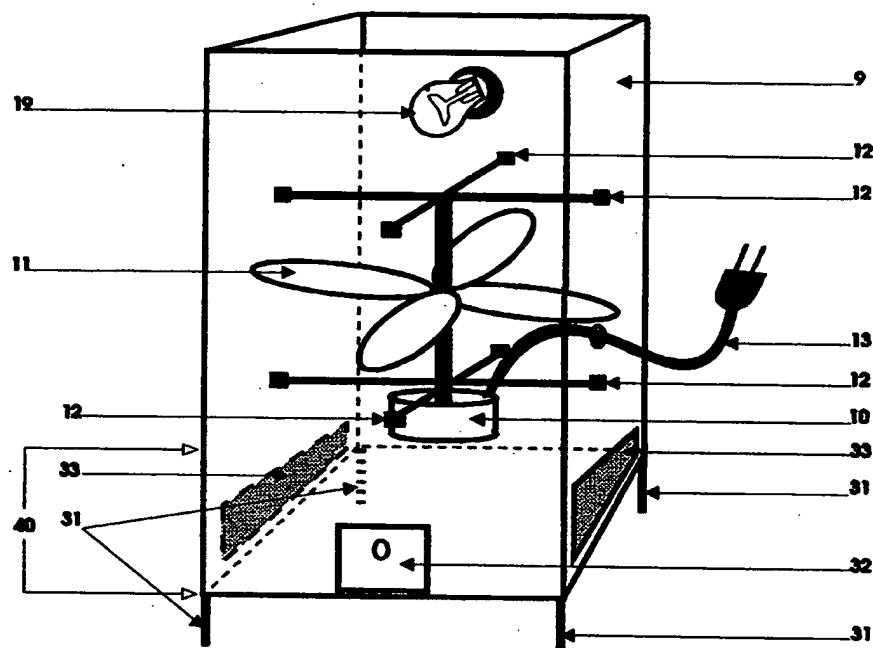


FIG. 4



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